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SOME NOTES ON SCHIST-CONGLOMERATE OCCURRING IN GEORGIA¹

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The rather remarkable schist-conglomerate here described occurs in Lumpkin County, Georgia, about $2\frac{1}{2}$ miles southeast of Dahlonega,

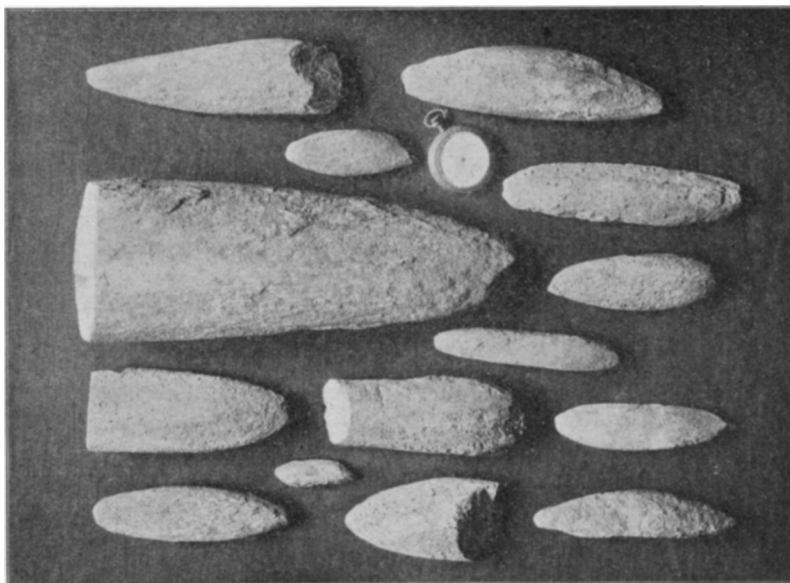


FIG. 1.— Stretched boulders weathered from schist-conglomerate, Lumpkin County, Georgia.

the county site. The best exposure is to be seen on the Dahlonega-Auraria public road at a point where the road traverses a narrow ravine along a small stream. The conglomerate here forms a number of low, disconnected bluffs on the south side of the road, and also occurs in the bed of the stream, where it forms a series of cascades. In passing the road, most persons would likely mistake the exposure for an outcropping of biotite-schist—a rock

¹ By permission of the State Geologist.

of frequent occurrence in the Dahlonega district. It is only by a close examination from different view-points that the true nature of the rock can be made out. Along a fresh cleavage plane the rock has every appearance of a biotite-schist with a comparatively small amount of quartz, while sections normal to the cleavage, or forming various angles therewith, reveal the presence of elongated boulders and pebbles in greater or less abundance. The individual boulders and pebbles are to be seen to the best advantage in the bed

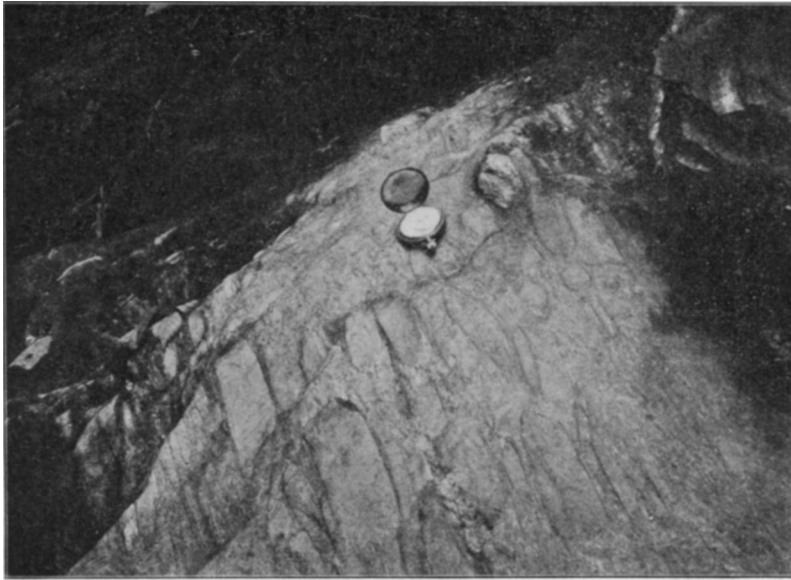


FIG. 2.—Schist-conglomerate, showing stretched boulders, Lumpkin County, Georgia.

of the stream, where the surface of the conglomerate has been polished by the action of the water. They are also to be seen in considerable numbers in the residual clays on the hill slope, where they have weathered from the outcroppings of the conglomerate at higher elevations.

The boulders and the pebbles are both quite variable in size, but they are always greatly elongated in the direction of the schistosity.

Some of the larger boulders attain a length of three feet. They are usually flat, spindle-shaped, with the greater diameter near the center. In cross-section they are ellipsoidal, the major axis being from two to three times as great as the minor axis, while the lengths of the boulders themselves in many instances appear to be from five to



FIG. 3.—Schist-conglomerate, showing boulders and pebbles greatly elongated, Lumpkin County, Georgia.

fifteen times their original diameters. Owing, however, to a joint structure of the conglomerate, developed at nearly right angles to the schistosity, only the less elongated boulders are to be found entire in the residual clays, the longer ones being usually divided by the

joints into two or more divisions. The surface of the boulders is generally more or less roughened and occasionally pitted, as if having been attacked by some dissolvent agent. Striations, corresponding in direction to the long axis of the boulders, are sometimes noticed, but such markings are not common.

A microscopical examination of thin sections shows that the boulders and the pebbles consist almost entirely of interlocking grains of quartz, the chief accessory mineral being mica, which makes

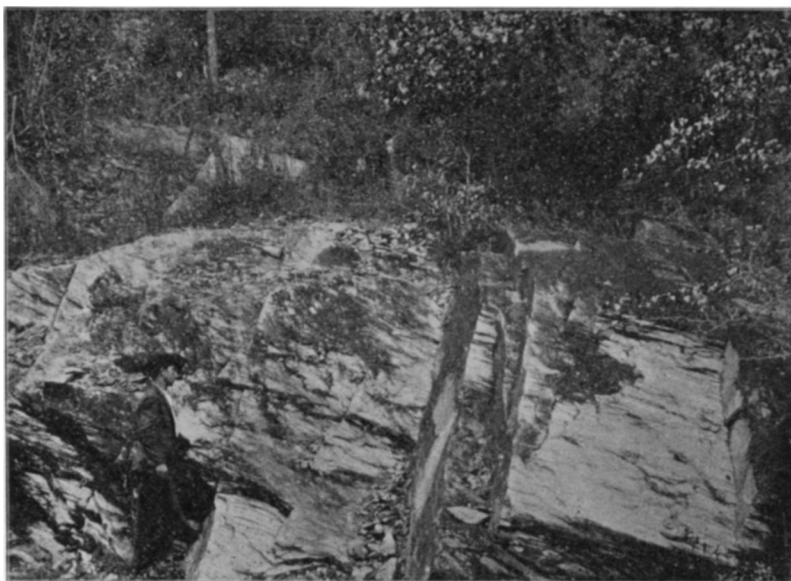


FIG. 4 — Schist-conglomerate, showing joint structure, Lumpkin County, Georgia

up, apparently, only a fractional part of 1 per cent. of the entire mass. The quartz grains in some cases are slightly elongated in the direction of the longer axis of the boulders, but the extent of the deformation is by no means sufficient to account for the elongation of the boulders themselves. The matrix, binding the boulders and pebbles together, is made up chiefly of biotite and quartz, the former mineral being the more abundant. Magnetite also occurs in more or less abundance in the matrix in the form of crystals arranged along certain well-defined lines.

The rocks associated with the schist-conglomerate seem to be highly metamorphic clastics and intrusives, the former being represented by biotite-schist and the latter by diorite-schist. The age to which these altered clastics belong is not definitely known. They are probably early Cambrian or Algonkian, but they may possibly be even more recent.